

(No Model.)

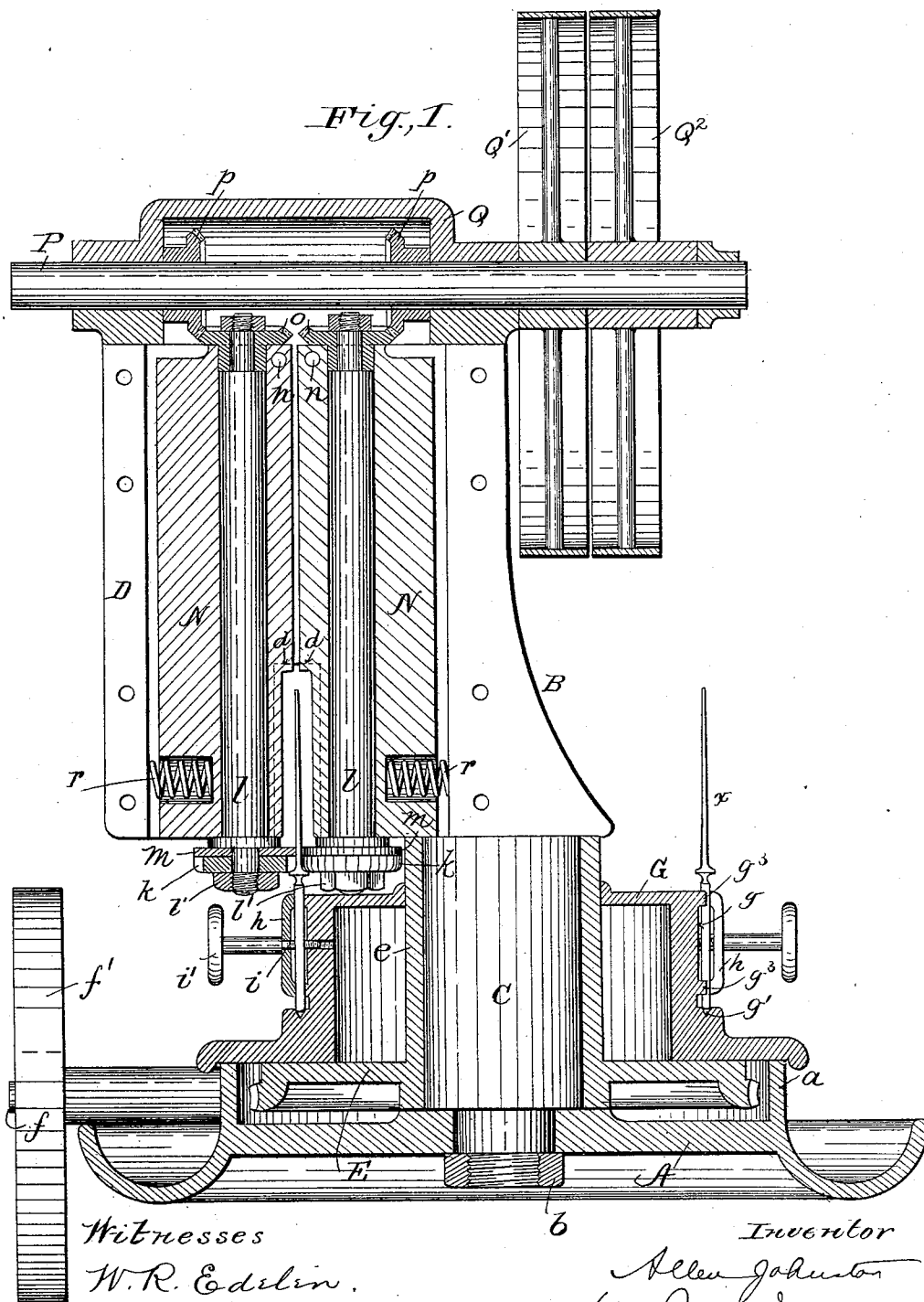
3 Sheets—Sheet 1.

A. JOHNSTON.

MACHINE FOR MILLING BOLSTERS OF KNIVES, &c.

No. 600,153.

Patented Mar. 8, 1898.



Witnesses

W. R. Edelin.

Rever Lewis.

*Inventor*

Allen Johnston  
by Edward Mann  
his attorney

(No Model.)

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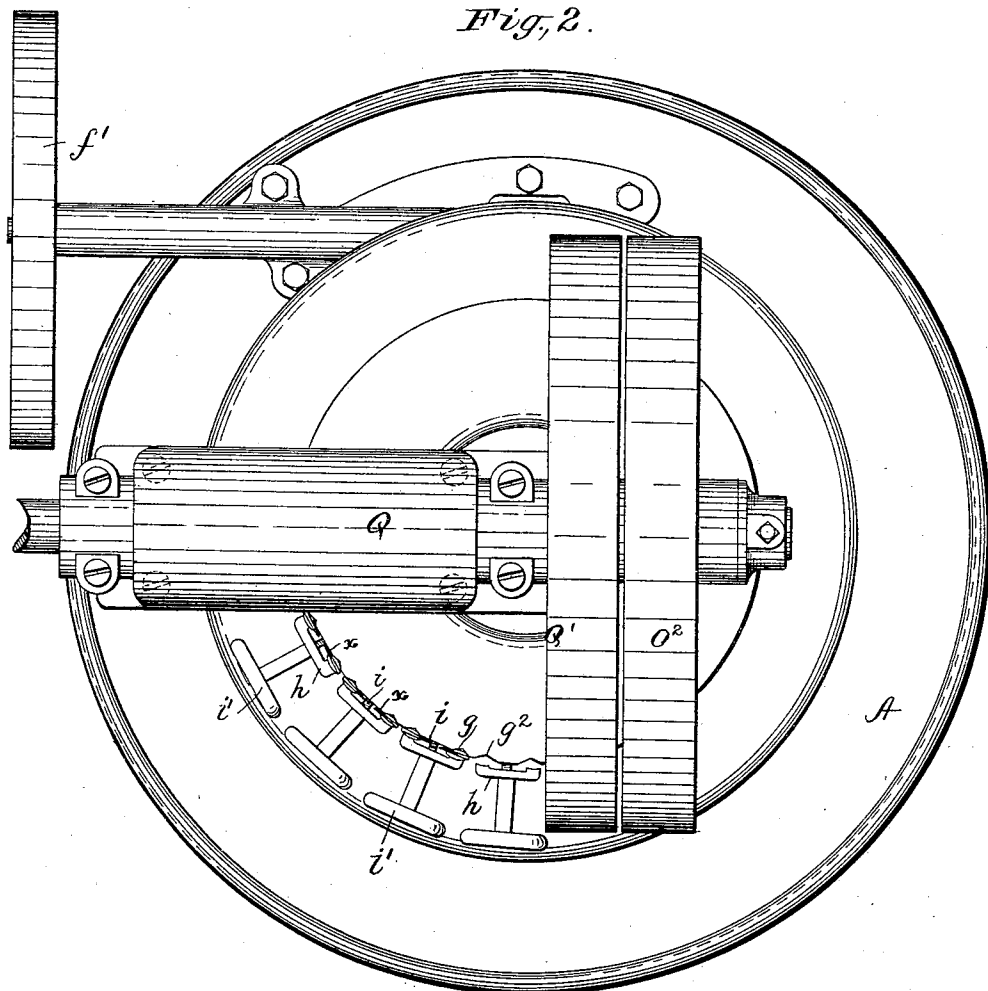
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*Fig. 2.*



Witnesses

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Inventor.

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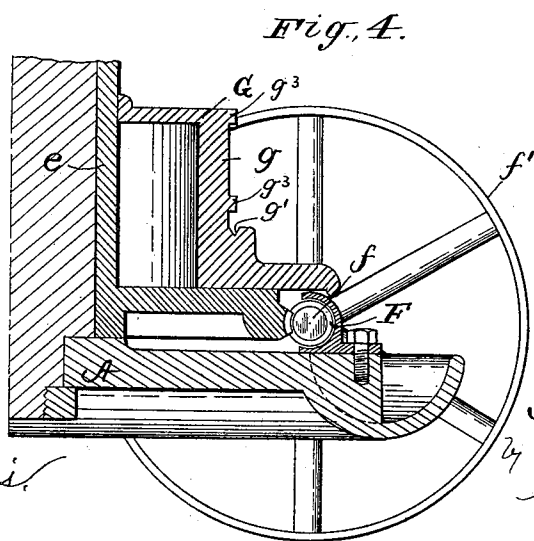
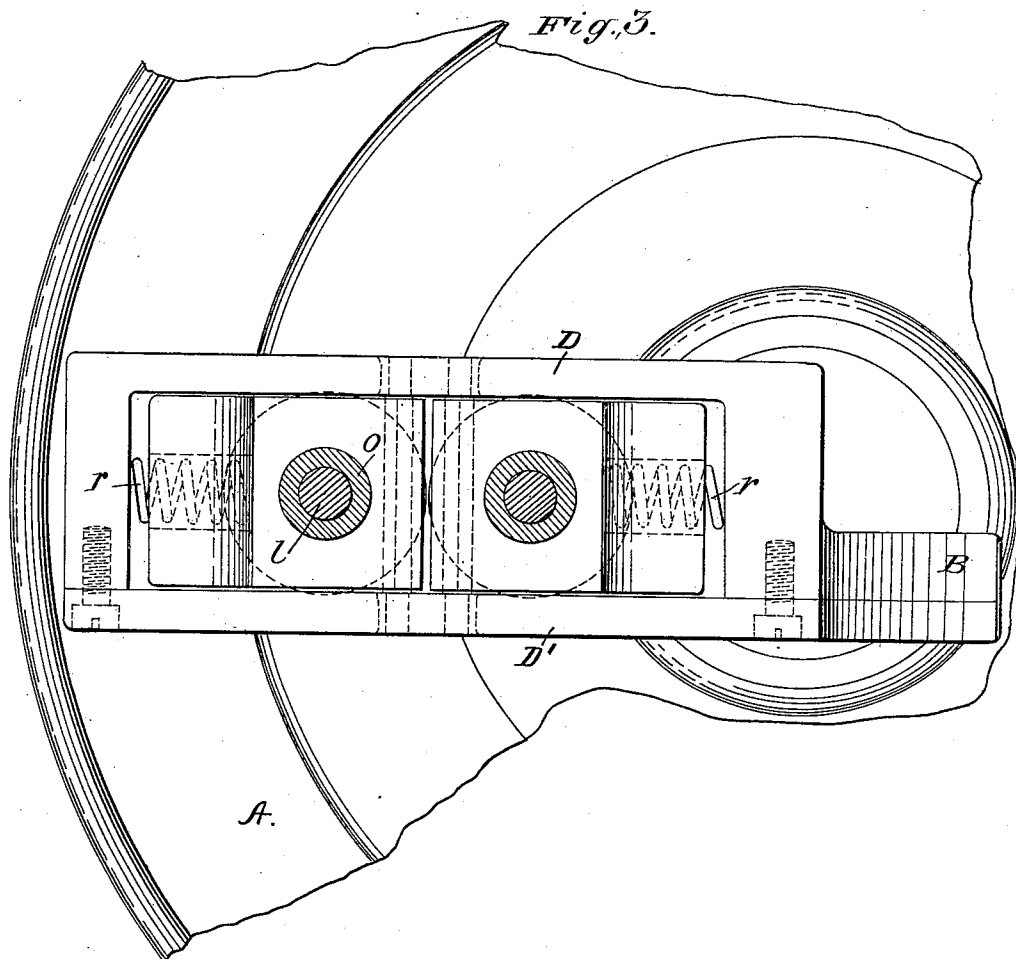
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Witnesses  
H. R. Edison.

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his attorney.

# UNITED STATES PATENT OFFICE.

ALLEN JOHNSTON, OF OTTUMWA, IOWA.

## MACHINE FOR MILLING BOLSTERS OF KNIVES, &c.

SPECIFICATION forming part of Letters Patent No. 600,153, dated March 8, 1898.

Application filed May 6, 1897. Serial No. 635,390. (No model.)

*To all whom it may concern:*

Be it known that I, ALLEN JOHNSTON, of Ottumwa, Iowa, have invented new and useful Improvements in Machines for Milling the Bolsters of Knives and Similar Articles, which improvements are fully set forth in the following specification.

This invention relates to milling-machines for shaping the bolsters of knives.

10 Stated in its broadest sense my invention consists in milling the bolsters of knives by utilizing a previously-shaped part of the work as a form or gage for determining the depth of cut.

15 More specifically stated my invention relates particularly to milling that part of the bolsters of knives that joins the blade, in performing which operation the main object in view is to properly shape the front of the bolster and at the same time to effect a perfect joint with the previously-shaped blade. In accomplishing this object great care must be exercised lest the milling be carried too far—that is to say, to such extent as to bring the  
20 lowest point in the curvature of the face of the bolster below the level of the surface of the blade, making a flush connection therewith impossible and thereby rendering the product worthless. In accordance with my  
30 invention the previously-shaped blade is used as a gage to determine the extent to which the metal is to be cut away, making excessive milling impossible, and insuring a perfect connection between the bolster and blade.  
35 In thus utilizing the blade as a gage the milling-wheel is mounted to be held in contact with the knife by yielding pressure, and adjacent to said wheel is located a stop, preferably in the form of a disk, the operating-  
40 surface of which is flush with the peripheral surface of the milling-wheel (or that part thereof which effects the deepest milling) and is adapted, upon the bolster being sufficiently cut away, to make contact with the knife-  
45 blade and thus prevent further action of the cutter.

Another important feature of my invention is the arrangement of milling-cutters and rotatable carrier having thereon a number of  
50 holders, whereby a number of knives held thereby can be rapidly and successively presented for the action of the milling-cutters.

The features above referred to, as well as other important features of the invention, will be fully understood by reference to the accompanying drawings, illustrating one embodiment of my invention in what has been found to be a practically successful machine, and wherein—

Figure 1 is a vertical sectional view. Fig. 60 2 is a plan view. Fig. 3 is a plan view of part of the machine, the cover of the casing being removed and some parts omitted; and Fig. 4 is a sectional detail.

Referring to the drawings, A represents 65 the base or frame upon which the parts of the machine are mounted, having an annular flange *a* projecting upwardly thereon, and which may be supported upon any suitable pedestal. (Not shown.) 70

B is a casting secured in a vertical position on said base by means of a nut *b* and formed with a lower cylindrical part C and an upper inclosing casing D for the driving and supporting mechanism for the milling-cutters, 75 said casing D being constituted in part by a plate D'.

*d d* are slots in the sides of casing D (see Fig. 1, dotted lines) through which the knives pass as the work-holder is rotated, as herein- 80 after described.

E is a worm-wheel bearing against the base A and located within the flange *a* thereon, said wheel having a hub *e*, engaging about cylindrical part C, which serves as an axis for the 85 wheel. Wheel E is rotated by a worm F on shaft *f*, carrying a pulley *f'*, by which it is rotated from any suitable source of power.

G is an annular platform arranged concentrically to hub *e* of wheel E and overhang- 90 ing the latter and flange *a*, thereby inclosing the worm-wheel. Said platform has a vertical face *g*, adjacent to which a V-shaped groove *g'* is formed in the horizontal surface of the platform, said groove serving as a rest 95 for the end of the handles of knives *x*, which are held in notches *g<sup>2</sup>* in flanges *g<sup>3</sup>* (see Fig. 1) on the vertical surface *g* of the platform by a series of work-holders, (only a few of which are shown in the drawings,) one for 100 every two knives. Said work-holders consist of plates *h*, each having four feet (two to each knife) suitably notched to embrace the knife-handle, (see Fig. 2,) against which they

are tightly clamped by screws *i*, taking into the platform G and operated by hand-wheel *v*.

*k k* are the milling cutters or wheels of a contour to impart the proper curvature to the surface to be acted upon and of the usual construction, secured to the lower ends, respectively, of shafts *l l* by nuts *l' l'*. Adjacent to milling-wheels *k k* on the upper side thereof and of the same diameter are located disks or washers *m m*, which, after the milling has penetrated to the proper depth, come in contact with the previously-shaped knife-blade and act as stops to prevent further cutting away of the metal.

Shafts *l l* extend longitudinally through and bear in frames N N, pivoted at *n n* between the sides of casing D, and at their upper ends said shafts carry bevel-gears *o o*, which mesh with suitable gears *p p* on a driving-shaft P, journaled in a cap Q on casing D. Shaft P carries at its projecting end a fast pulley Q' and a loose pulley Q. At their lower ends frames N N, and consequently milling-wheels *k k*, are forced toward each other by means of springs *r r*, which thereby supply the yielding pressure for holding the milling-cutters against the work.

*Operation of the machine.*—In view of the foregoing description the operation of the machine will require little explanation. A number of knives having been secured in position by the plates *h* the platform is slowly rotated by means of worm F, bringing the knives successively between the oppositely-rotating milling-cutters *k k*, which being yieldingly pressed against opposite sides of the knife by springs *r r* cut away the metal of the bolster to reduce the front face thereof to the proper shape, the depth of cut being controlled, as already explained, by washers *m m*. The operation being once started can be continued until all of the knives have been operated upon.

It will be obvious that with a machine such as that herein described little care or attention is called for and the services of skilled workmen not required. Many other advantages will be apparent which it is not necessary here to refer to.

Of course the milling-cutters could be made movable and the work-holders remain stationary, if desirable, but the arrangement shown is deemed preferable. In the same manner one milling-wheel may be employed instead of two and the knives reversed in their holders to complete the milling of the bolster on both sides of the knife, but the operation is much expedited by employing two milling-wheels and acting simultaneously upon both sides of the knife.

Modifications may be made within wide limits without departing from the principle of my invention.

While I have in the foregoing specification and in the claims following referred only to knives as being milled, it will of course be understood that such forks (or similar arti-

cles) as have bolsters are susceptible of being milled by machines constructed in accordance with the invention and are embraced within the terms of the specification and claims.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a bolster-milling machine, the combination of a milling-cutter, means for pressing the same into contact with the work, and a stop rigidly connected with the cutter and arranged to make contact with a previously-finished part of the knife, whereby the milling is arrested when the said stop comes into contact with the work, substantially as described.

2. In a milling-machine for milling the concave face of the bolsters of knives adjoining the blade, a milling-cutter held in contact with the work by yielding pressure, and a stop rigidly connected with said cutter and adapted to make contact with the previously-shaped blade to prevent excessive milling, substantially as described.

3. In a milling-machine for milling the concave face of the bolsters of knives adjoining the blade, two milling-cutters held respectively in contact with opposite sides of the work by yielding pressure, and stops, one rigidly connected to each cutter, adapted to make contact with the previously-shaped blade to prevent excessive milling, substantially as described.

4. In a milling-machine for milling the concave face of the bolsters of knives adjoining the blade, a milling-cutter held in contact with the work by yielding pressure, a stop rigidly connected with said cutter and adapted to make contact with the previously-shaped blade to prevent excessive milling, and means for moving the knife while in contact with the cutter, substantially as described.

5. In a bolster-milling machine, the combination with a milling-cutter held in contact with the work by yielding pressure, of a work-holder adapted to hold a number of knives, and means for moving the work-holder and cutter relatively to each other whereby the knives are successively presented to the action of the cutter, substantially as described.

6. In a bolster-milling machine, the combination with two milling-cutters pressed toward each other by yielding pressure, of a work-holder adapted to hold a number of knives, means for moving the work-holder and cutters relatively to each other, whereby the knives are successively passed between the cutters, substantially as described.

7. In a bolster-milling machine, the combination with a rotatable platform and means for securing a number of knives in position thereon, of two frames pivoted to a stationary part of the machine above the platform and yieldingly pressed toward each other, two milling-cutters having bearings in the frames respectively, means for rotating said milling-

cutters and means for rotating the platform to successively present the knives between the milling-cutters, substantially as described.

5 8. In a bolster-milling machine, the combination with a rotatable platform and means for securing a number of knives in position thereon, of two frames pivoted to a stationary part of the machine above the platform and yieldingly pressed toward each other, two  
10 milling-cutters having bearings in the frames respectively, stops, one for each cutter, adapted to make contact with opposite sides of the

previously-shaped blade to prevent excessive milling, means for rotating said milling-cutters and means for rotating the platform to  
15 successively present the knives between the milling-cutters, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ALLEN JOHNSTON.

Witnesses:

CHAUNCEY A. SHERMAN,  
FANNIE C. CHURCH.